

**SCOPE OF WORK**  
**CONSTRUCTION MANAGEMENT**

Routt County    Choke Cherry Lane South

December 25, 2007

**Description and Overview of Project & Required Services**

Services are requested to provide construction management on CDOT Project HB 131A-033 on State Highway 131 in Routt County. HB 131A-033, Subaccount number 16189, is a minor widening project on State Highway 131, from approximately M.P. 58.11 to M.P. 61.60. The total budget for the project is \$7.74 million. The project was advertised on December 13, 2007 with bid opening scheduled for January 10, 2008. The project is a completion day contract of November 14, 2008. The project is expected to start in April, 2008 and complete in November, 2008. The actual start date will be determined after project is awarded.

**No contract will be signed if funding is not available or the construction project is not awarded.**

**Selection of the successful consultant shall be based solely on the written information submitted for the CDOT selection panel review.**

The requested construction services include one Consultant Project Engineer, two inspectors, and two testers, all experienced and competent in all aspects of a CDOT minor widening construction project and traffic control. Consultant personnel shall perform project management, including all inspection and materials sampling, testing, certification, and documentation on this project. Consultant personnel will be experienced and thoroughly familiar with CDOT specifications, manuals, forms, and documentation requirements. Consultant Project Engineer and inspectors shall have working knowledge of SiteManager and Quality Pavement Management (QPM) programs; Consultant testers shall have a working knowledge of QPM programs.

General requirements are outlined in **Section 1** of this Scope of Work. Construction management requirements are outlined in **Section 2**. **Section 3** contains inspection requirements, and **Section 4** contains materials testing requirements.

The Consultant shall provide a Professional Engineer registered in the State of Colorado who will have overall responsibility for the project and oversee all Consultant personnel on the project. The Consultant Project Engineer shall have direct charge of the work and is responsible for the day to day administration and satisfactory completion of the project. The Consultant Project Engineer shall have sufficient education, training, and experience to meet the minimum qualification comparable to CDOT's Civil Engineering Project Manager II (CEPM II)-level employee or Professional Engineer. The Consultant inspectors shall meet minimum qualifications comparable to CDOT's Engineer/Physical Sciences Technician II-level employee and have successfully completed CDOT Inspector Qualification Program prior to start of work. Consultant tester shall meet applicable requirements as outlined in Section 4. In addition to those qualifications listed in the specific sections, Consultant personnel checking certified payrolls shall have completed CDOT's payroll checking training.

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The following task requirements are not intended to be a definitive listing of every activity required of the Consultant on this project. Refer to the references listed in the **Project Standards** below for more detailed information.

All work shall be performed in accordance with the basic contract's Scope Of Work (Exhibit A) as supplemented by these task requirements.

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### **Section 1 - General Requirements**

#### **A. Definitions**

Resident Engineer – The CDOT Resident Engineer is directly responsible for the overall administration of assigned construction projects. The Resident Engineer is CDOT's full time engineer in responsible charge of the project. The Resident Engineer will delegate authority to Project Engineers consistent with their experience and abilities. Only the Resident Engineer can approve and sign vouchers for interim and final contractor pay estimates. Only the Resident Engineer can authorize and sign changes to the contract when the Project Engineer is a Consultant Employee.

Contractor – The individual, firm, or corporation contracting with CDOT to construct a transportation project.

Consultant Engineer – The Consultant Professional Engineer, licensed in the State of Colorado, is in responsible, overall charge of construction and Consultant personnel. The Consultant Engineer shall be available to review work, stamp and sign required forms, resolve problems, and make decisions in a timely manner as requested by the Resident Engineer.

Consultant Project Engineer – The Consultant Project Engineer is a Consultant employee under the responsible charge of the Consultant Engineer who is in direct charge of the work and is responsible for the day to day administration and satisfactory completion of the project. The Consultant Project Engineer's duties are delegated by the Resident Engineer in accordance with the scope of work in the Consultant's contract with CDOT. The Consultant Project Engineer is not authorized to sign or approve Contract Modification Orders.

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Consultant Inspector or Materials Testing Technician – These are Consultant's employees who perform inspection and testing services under the responsible charge of the Consultant or CDOT Project Engineer. Some inspection activities may require the service of a Landscape Architect or equivalent experience.

#### **B. Project Standards**

All construction management, inspection, sampling, testing, and documentation shall be in accordance with the latest versions of the Colorado Department of Transportation Construction Manual, the Colorado Department of Transportation Field Materials Manual, the Colorado Department of Transportation Inspector's Checklist, the Colorado Department of Transportation Standard Specifications for Road & Bridge Construction, the Supplemental Specifications, applicable M & S standards, and the plans and specifications currently in use when the construction project is advertised or revised under advertisement. All Consultant construction management, inspection, or testing activities performed shall be as authorized by the Resident Engineer. Call CDOT's Bid Plans Room at (303) 757-9313 to order or obtain additional information.

All Consultant personnel shall comply with CDOT's Safety, Sexual Harassment, Discrimination, and Workplace Violence Policies and Procedures.

For the purposes of this document, Construction Management, Inspection, and Testing shall be known as "the work" and references to "the specifications" shall include but not be limited to all applicable CDOT Standard Specifications for Road and Bridge Construction including Supplemental Specifications, Project Standard Revisions and Project Special Provisions, and project plans and specifications.

The Consultant Project Engineer is in direct charge of the work and is responsible for the day to day administration of the project contract as defined in the CDOT Standard Specifications and Standard Special Provisions. Any references to Project Engineer or Engineer in this document shall mean the Consultant Project Engineer. Excepting the Consultant Engineer, Consultant personnel shall be on the project when the contractor is working.

#### **C. Labor, Materials, Vehicles, and Equipment**

The Consultant shall furnish all personnel, materials, equipment, and transportation required to perform the work. Consultant personnel shall have appropriate vehicles (equipped with flashing amber beacon), cellular phone, computer, and miscellaneous equipment (calculator, office supplies, safety equipment, etc.) required to perform the work. Consultant's computer shall be compatible with CDOT software and communications requirements. Computer equipment shall have MS Word, MS Excel, MS Project, a communications package capable of transmitting and receiving electronic messages, an internet address, and sufficient memory to load SiteManager and QPM programs (minimum requirements: Pentium/Equivalent with 256MB RAM and 40 GB available disk space).

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Field office and laboratory trailer space will be provided by contractor pay item.

Personnel qualifications, staffing level, and number and types of vehicles shall be subject to the approval of the Resident Engineer. The Consultant shall assign personnel for the duration of the contract unless otherwise approved by the Resident Engineer.

All Consultant personnel must be thoroughly familiar with CDOT specification, manuals, forms, and documentation requirements. Consultant personnel who do not meet all of the specified requirements, or who fail to perform their work in an acceptable manner, shall be removed from the project when determined and directed by the Resident Engineer.

#### **D. General Work Initial Project Meeting**

Project HB 131A-033, Choke Cherry Lane South, will be administered by the Consultant Project Engineer unless otherwise changed by the Resident Engineer. All support construction staff will be Consultant personnel as approved by the Resident Engineer.

The Consultant project personnel shall meet to coordinate and schedule the required work. The Consultant shall prepare a schedule to perform the required scope of work for the project. The Consultant shall complete all work in accordance with the approved schedule or as approved by the Resident Engineer.

In accordance with the requirements defined in CP-16 of the CDOT Field Materials Manual, Consultant personnel shall meet with Residency Head Tester and Region Materials Engineering/Physical Science Technician to coordinate and schedule the required materials work. The Consultant shall complete all work in accordance with their approved schedule. A Consultant Materials Testing Evaluation, pursuant to CP-16, shall be administered by CDOT.

#### **E. Work Duration**

The estimated time period for the work described in this scope of work covers a period of one year. Approximately six (6) months of this time will require full-time management, inspection, and testing services for the main portion of construction of this project.

Work may be required night and/or day, on weekends, holidays and/or on a split shift basis. Workweeks may be in excess of or less than the standard 40-hour week.

#### **F. Location of Work**

The work is between approximately M.P. 58.11 and M.P. 61.60, State Highway 131, in Routt County.

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#### **G. Authorization to Proceed**

Work shall not commence until the written Notice to Proceed is received by the Consultant. Consultant shall complete the work in the time specified.

#### **H. Routine Billing & Reporting**

The Consultant shall provide the following on a regular basis:

- 1) Monthly progress reports required by the contract.
- 2) Monthly billings, in a format suitable to the Resident Engineer, for all contract activities performed by the Consultant.

#### **I. Status of Contract**

The Consultant shall monitor the fiscal status of the contract and advise the Resident Engineer of any potential for supplementing their contract or negotiating an additional task order. Failure to monitor contract status and provide timely notification may result in discontinuation of the Consultant's services on the project until a supplemental agreement can be effected.

#### **J. Documentation**

Each of the Consultant's personnel shall maintain a daily diary for each day they perform work on the project on an approved form. CDOT's Form 103 or Automated Form 103a - Project Diary and SiteManager Diary shall be used. The contents of the diary shall be brief, with accurate statements of progress and conditions encountered during the prosecution of the work. Editorial comments are not to be incorporated in the diaries or on any written correspondence applicable to the project. A copy of the daily diary shall be available to the Resident Engineer within one working day of its date.

#### **K. Submittal of Final Documentation**

Failure to submit final documentation as required may result in withholding Consultant payments received subsequent to project acceptance until this material is received.

#### **L. Engineer's Certification**

The Consultant shall provide an engineer registered in the State of Colorado who will be in overall responsible charge of construction. This person shall be referred as the Consultant Engineer.

The Consultant's materials tester's work shall be under the direction of, and shall be reviewed, stamped, and signed by the Consultant Engineer. Work to be stamped will be the summary sheets, i.e., CDOT Forms 6, 9, 58, 69, 212, 250, and 554.

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The Consultant Engineer shall be available to review work, resolve problems, and make decisions in a timely manner as requested by the Resident Engineer.

The Consultant Project Engineer must be experienced and competent in all aspects associated with a CDOT minor-widening project, and associated construction management, inspection, and materials testing. The Consultant Project Engineer will be responsible for all aspects of monitoring the construction including, but not limited to, inspection, materials testing, shop drawings review, contract change orders preparation, work progress measurements, monthly contractor pay estimates preparation, daily diary reports, plan changes, consideration of extra work proposals, representation at construction meetings, preparation of as-built drawings, and final project documentation.

The Consultant Project Engineer shall provide daily or routine certifications as shown below. The Consultant Project Engineer is in responsible charge of all other Consultant personnel on the project, and shall provide the following certification on a monthly basis:

"The items listed above this certification were tested or inspected and found to be in reasonably close conformity to the plans and specifications except as noted."

When performing construction management services the Consultant Project Engineer shall also provide monthly certifications prior to processing monthly contractor interim progress payments as shown:

"The construction on this project is being conducted in reasonable close conformance with the plans and specifications."

The Consultant Project Engineer shall also provide a final certification at the completion of the project as shown:

"The project has been completed in reasonably close conformity with the plans and specifications including authorized changes. The project has been reviewed for obvious safety deficiencies. The project Right of Way appears to be free from unauthorized encroachments resulting from construction on this project. The Form FHWA - 47 has been completed and submitted."

## **Section 2 – Construction Management Requirements**

The following checklist shall be utilized to establish the construction management responsibilities of the individual parties for this project.

THE CHECKLIST SHALL BE PREPARED BY PLACING AN X UNDER THE RESPONSIBLE PARTY OPPOSITE EACH OF THE TASKS LISTED BELOW.

WHEN A TASK DOES NOT APPLY TO THE PROJECT, NOT APPLICABLE (N/A) SHALL BE PLACED UNDER BOTH.

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TASKS TO BE PERFORMED BY CDOT HEADQUARTERS STAFF WILL BE SO INDICATED.

THE REGION IN ACCORDANCE WITH ESTABLISHED POLICIES AND PROCEDURES SHALL DETERMINE WHO WILL PERFORM ALL OTHER TASKS, WHICH ARE THE RESPONSIBILITY OF CDOT.

<b><u>DESCRIPTION OF TASK</u></b>	<b>Consultant</b>	<b>CDOT</b>
1. Schedule, conduct, and prepare minutes of all project meetings as follows (as described on in Section 120.13 and Appendix A of the CDOT 2002 Construction Manual):		
a. Weekly Project Meetings	__X__	_____
b. Presurvey Conference:		
i. Construction staking	__X__	__X__
ii. Survey Monumentation	__X__	__X__
c. Construction Communications	__X__	_____
d. Pre-Work Conferences	__X__	_____
e. Contractor Weekly Safety "Tool Box" Meeting	__X__	__X__
2. Manage the construction.		
a. Professional Engineer (PE) registered in Colorado, who will be "in responsible charge of construction."	__X__	__X__

<b><u>DESCRIPTION OF TASK</u></b>	<b>Consultant</b>	<b>CDOT</b>
Consultant Engineer name _____		
License number _____		
3. Handle public relations.		
a. Prepare and coordinate with CDOT and others to publish and distribute public notices of all planned construction activities and schedules to the media, property owners, local residents, tenants, and any other appropriate stakeholders affected by the project.	__X__	__X__

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|--|-------|-------|
| b. Perform public relation tasks with appropriate individuals as requested by CDOT.                              | __X__ | _____ |
| c. Explain construction and work with adjacent property owners to resolve issues that arise during construction. | __X__ | _____ |
4. Review, comment, accept and/or approve as appropriate the following submittals:
- Note: This list is not all-inclusive and other submittals may require action as directed by CDOT.
- |  |       |       |
|--|-------|-------|
| a. CDOT Form 205 - Sublet Permit Application after Form 713 has been checked by the Region EEO Administrative Program Specialist | __X__ | _____ |
| b. Method of Handling Traffic  | __X__ | _____ |
| c. Progress Schedules  | __X__ | __X__ |
| d. Method statements   | __X__ | _____ |
| e. Shop drawings per 105.02  | __X__ | _____ |
| f. Working drawings per 105.02   | __X__ | _____ |
| g. Other submittals per 105.02   | __X__ | _____ |
| h. All EEO and Labor compliance requirements   | __X__ | __X__ |
| i. Other submittals as directed  | __X__ | _____ |

**DESCRIPTION OF TASK**

- |   | Consultant | CDOT  |
|---|------------|-------|
| 5. Perform construction inspection including but not limited to measurements, and documentation of interim and final pay quantities.  | __X__      | _____ |
| 6. Perform required EEO/AA/DBE/OJT or labor compliance tasks as requested as follows:   |            |       |
| a. Conduct Contractor/Subcontractors reviews to ensure conformance with the Equal Employment Opportunity (EEO)/Affirmative Action (AA)/DBE/OJT requirements contained in the contract (Standard Special Provisions, Project Special Provisions and FHWA Form 1273). | __X__      | __X__ |



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|---|---------|---------|
| b. Complete and submit to the CDOT Region EEO Administrative Program Specialist, the required number of CDOT Form 280 - Equal Employment Opportunity and Labor Compliance Verification.   | __X__   | _____   |
| c. Monitor DBE participation to ensure compliance with the "Commercially Useful Function" requirements.   | __X__   | _____   |
| d. Complete and submit to the CDOT Region EEO Administrative program Specialist, the applicable number CDOT Form 200 - OJT Training Questionnaire, when project utilizes OJT's.   | __X__   | _____   |
| e. Check certified payrolls to verify compliance with contract requirements. The checking shall be completed by project personnel trained in CDOT's payroll checking training course. (Contact Region EEO Administrative Program Specialist for training.)  | __N/A__ | __N/A__ |
| f. Coordinate submittals by contractor and all sub-contractors of FHWA Form 1391 (Highway Construction Contractor's Annual EEO Report) to the CDOT Region EEO Administrative Program Specialist. The report is due to the Region EEO Administrative Program Specialist by August 10 for all construction projects active during the last complete week of July. | __X__   | _____   |
7. Conduct all materials task.
- |  |             |
|--|-------------|
| a. CDOT Form 250 - Materials Documentation Record:                             |             |
| i. Fill out and distribute CDOT Form 250 before the contractor commences work. | _____ __X__ |

### **DESCRIPTION OF TASK**

**Consultant**

**CDOT**

- |   |       |       |
|---|-------|-------|
| ii. Complete CDOT Form 250 after work is completed. Distribute pursuant to instructions in CDOT Materials Manual. | __X__ | _____ |
|---|-------|-------|

**NOTE: The completed CDOT Form 250 must be stamped by the Consultant Engineer.**

- |   |       |       |
|---|-------|-------|
| b. Approve changes to typical section. (requires a CMO) | __X__ | __X__ |
|---|-------|-------|

**NOTE: The Consultant may negotiate costs for extra work but only CDOT can approve costs. Only the Resident Engineer can approve and sign MCR/CMOs for modifying CDOT's contract or paying the contractor.**

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c. Participate in the development, checking, and approval of mix designs:		
i. Concrete	<u>  X  </u>	<u>  X  </u>
ii. Hot Mix Asphalt (HMA)	<u>  X  </u>	<u>  X  </u>
d. Accept manufactured products.	<u>  X  </u>	<u>      </u>
e. Inspect fabrication of structural steel and prestressed concrete structural components. PE to inspect after delivery.	<u>  X  </u>	<u>  X  </u>
f. Inspect fabrication of bearing devices. PE to inspect after delivery to site.	<u> N/A </u>	<u> N/A </u>
g. Conduct Laboratory check testing.	<u>  X  </u>	<u>  X  </u>
h. Complete acceptance testing.	<u>  X  </u>	<u>      </u>
i. Ensure independent assurance testing (Region Materials Laboratory will develop, complete, and distribute CDOT Form 379 - Project Independent Assurance Sampling Schedule.)	<u>      </u>	<u>  X  </u>
j. Approve sources of materials in consultation with Region Lab.	<u>  X  </u>	<u>  X  </u>
8. Maintain time counts.	<u>  X  </u>	<u>      </u>
9. Maintain project files for all documentation.	<u>  X  </u>	<u>      </u>
10. Obtain, accept, and approve all required contractor submittals.	<u>  X  </u>	<u>      </u>
11. Review and/or approve shop drawings.	<u>  X  </u>	<u>  X  </u>
<b><u>DESCRIPTION OF TASK</u></b>	<b>Consultant</b>	<b>CDOT</b>
12. Perform Traffic Control Inspections.	<u>  X  </u>	<u>      </u>
13. Approve construction traffic control devices.	<u>  X  </u>	<u>      </u>
14. Monitor Construction surveying.	<u>  X  </u>	<u>      </u>
15. Monitor ROW monumentation.	<u>      </u>	<u>  X  </u>
16. Prepare monthly estimates of the contractor's work performed, materials placed or stockpile materials on hand in accordance with the contract.	<u>  X  </u>	<u>      </u>

**NOTE: Only the Resident Engineer can approve and sign vouchers for interim and final contractor pay estimates.**

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| 17. Review interim and final billings for utility relocation work. | __X__ | _____ |
|--|-------|-------|

**NOTE: Only a CDOT employee can prepare, approve and sign vouchers for interim and final Utility Company billings.**

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|---|-------|-------|
| 18. Prepare CDOT Form 90 Contract Modification Order (CMO), including writing the letter of explanation for CMO or Minor Contract Revision (MCR). | __X__ | _____ |
|---|-------|-------|

**NOTE: The Consultant may negotiate costs for extra work but only CDOT can approve costs. Only the Resident Engineer can approve and sign MCR/CMOs for modifying CDOT's contract or paying the contractor. Only CDOT or FHWA can approve Federal-Aid funding for MCRs/CMOs.**

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|--|-------|-------|
| 19. Monitor project financial status and submit monthly in a format acceptable to the Region, such as CDOT Form 65a - Project Financial Status Report.   | __X__ | _____ |
| 20. Prepare and submit monthly progress reports to the Region Program Engineer: CDOT Form 110a - Status of Active Construction Projects, and CDOT Form 517a - Status of Construction Project Finals. | __X__ | _____ |
| 21. Prepare appropriate responses to contractor, Subcontractor, or supplier requests for information, submittals, disputes, claims, change notices, or other correspondence.                         | __X__ | _____ |
| 22. Prepare response for Resident Engineer regarding Status of Claim.  | __X__ | _____ |

### **DESCRIPTION OF TASK**

- |   | <b>Consultant</b> | <b>CDOT</b> |
|---|-------------------|-------------|
| 23. Prepare complete claim record.  | __X__             | _____       |
| 24. Give oral or written presentation to Region Director for claims.  | __X__             | _____       |
| 25. Give presentation for Claim Review Board or AAA Arbitration board.  | __X__             | _____       |
| 26. Conduct routine, random, project reviews to ensure the project is being administered in accordance with the terms of the construction contract. | __X__             | __X__       |
| 27. Conduct final project inspection of completed or unacceptable work and prepare punch list for final acceptance.                                 | __X__             | __X__       |
| 28. Prepare and submit CDOT Form 1212a – Final Acceptance Report.   | _____             | __X__       |

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|---|-------|-------|
| 29. Prepare final project acceptance letter and distribute pursuant to procedures in the CDOT Construction Manual.                                  | __X__ | _____ |
| 30. Advertise for final settlement. (CDOT Project Development branch when CDOT is responsible.)   | _____ | __X__ |
| 31. Maintain accurate as constructed notes and prepare and distribute final as-constructed plans pursuant to procedures in the Construction Manual. | __X__ | _____ |
| 32. Check final quantities, final plans, and the final pay estimate.  | __X__ | _____ |

**NOTE: Only CDOT can sign final pay estimate sheets and voucher**

- |   |       |       |
|---|-------|-------|
| 33. Generate and verify final earthwork quantities.   | __X__ | _____ |
| 34. Check material records.   | __X__ | __X__ |
| 35. Submit final materials certification.   | __X__ | __X__ |
| 36. Obtain and review CDOT Form 17 – Contractor DBE Payment Certification from the contractor and submit to Region Finals Engineer. | __X__ | _____ |
| 37. Obtain and review FHWA Form PR 47 (Statement of Materials and Labor Used) from the contractor, check and submit to Region.      | __X__ | _____ |

(REQUIRED ONLY ON NHS PROJECTS WITH TOTAL FINAL PAYMENTS EXCEEDING \$1,000,000.)

**DESCRIPTION OF TASK**

- |   | <b>Consultant</b> | <b>CDOT</b> |
|---|-------------------|-------------|
| 38. Complete and submit CDOT Form 950 Project Closure   | _____             | __X__       |
| 39. Submit original of all project records to the CDOT Resident Engineer. (CDOT will retain the project records for <u>six</u> years from date of project closure.) | __X__             | _____       |
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**Section 3 - Inspection Requirements**

**A. General Work Description**

The Consultant shall provide support to the Consultant project staff through assignment of personnel to construction inspection duties. Inspection work shall conform to the CDOT Construction Manual and the CDOT Inspector's Checklist. Inspection responsibilities include but are not limited to the following:

Performing duties described in the CDOT Inspector's Checklist.

Preparing and transmitting updates of construction activities to the CDOT's Public Information Office.

Monitoring and documenting contractor payroll compliance.

Participating in weekly progress meetings with contractor, subs, utilities, and other interested parties.

If applicable, monitoring project compliance with the stipulations of the Environmental Assessment and coordinate with other agencies and CDOT Landscape Architects to minimize all construction related impacts to the unique, natural, visual, and cultural characteristics of the environment. Activities to be monitored will include but not be limited to drilling and blasting, shotcrete application, environmental monitoring of turbidity, staining, seeding, and planting.

Monitoring environmental conditions, insuring that Stormwater Management plans are properly implemented and maintained.

Monitoring wetlands protection and encroachment avoidance.

Securing project documentation from the contractor.

Anticipating problems and directing solutions to the Project Engineer.

Reviewing drawings and data submitted by the construction contractor and suppliers for conformance with the intent of the specifications. Informing and obtaining concurrence as needed from the Project Engineer and keep relevant documentation for project records.

Maintaining accurate notes reflecting actual construction details to be used in preparation of as-constructed plans.

Communicating with adjacent landowners to resolve issues that may arise due to construction as required.

Reviewing and approving the Contractor's Method of Handling Traffic (MHT) if delegated by the Project Engineer.

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Monitoring compliance with and taking appropriate action to preserve safety on the project for all workers and traveling public in accordance with Method of Handling Traffic (MHT) and the Manual of Uniform Traffic Control Devices (MUTCD).

Conducting initial, follow-up, and final inspections of work in progress including interim and final measurements, and coordinating with the materials tester to ensure testing requirements are met.

Notifying contractors and Project Engineer of non-compliance with the contract plans and specifications in a timely manner.

Performing special tests, investigations, or monitoring which are required to fulfill the intent of the CDOT inspection program.

Preparing inspection documentation for development of progress payments for the contractor in accordance with prescribed procedures.

Submitting standard documentation reports no later than the following working day.

Preparing routine correspondence to the contractor, CDOT Staff, local agencies, etc.

Providing liaison and communication to contractor field crews.

Assisting in the preparation of final "As-Constructed" plans upon project completion.

Performing miscellaneous related duties as requested by the Project Engineer.

Assisting in preparing punch lists of uncompleted work, non-conformance reports, and deficiency notices.

Assisting in preparing responses to contractors' and suppliers' requests for information, submittals, change notices, claims, and correspondence.

#### **B. Personnel Qualifications**

The project inspection technician (PIT) shall be permanently assigned to the project and shall perform all materials inspection and construction documentation as directed by the Project Engineer. The PIT performing the inspection shall have successfully completed the CDOT Inspector Qualification Program pursuant to CDOT Policy Memo 25 issued March 4, 2005. The PIT shall have a minimum of one year experience in related road and bridge construction. The PIT shall have thorough knowledge of the use and completion of CDOT forms and documentation including the CDOT Construction Manual, the CDOT Materials Manual, SiteManager, and QPM programs. References of inspection experience shall be available for all Consultant staff provided and may be requested at any time by the Resident Engineer during the contract.

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**Section 4 - Materials Testing Requirements**

**A. General Work Description**

The Consultant shall sample, test, inspect, and document all materials generated and produced on the project. This includes materials delivered to the project that are listed in the Summary of Approximate Quantities (SAQ) in accordance with the SCHEDULE in the Field Materials Manual, any materials necessary for a Design/Build project, materials that may be added to the project through contract modification, and altered material quantities whether increased or decreased. The minimum number of tests required shall be in accordance with the Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection in the Field Materials Manual. The Consultant's Project Engineer, inspectors, and materials testing technicians shall be required to review project quantities on a weekly basis to ensure that sufficient tests have been performed for materials placed to date. The Consultant shall also provide any other services as requested by the CDOT.

In accordance with the requirements defined in CP-16 of the CDOT Field Materials Manual, Consultant personnel shall meet with Residency Head Tester and Region Materials Engineering/Physical Science Technician to coordinate and schedule the required materials work. The Consultant shall complete all work in accordance with their approved schedule.

Testing of materials that are specifically designated to be pre-inspected or pre-tested shall be performed by CDOT staff unless requested by the CDOT to be performed by the Consultant. The transport and documentation of materials required to be tested by the CDOT Central Laboratory shall be the Consultant's responsibility regardless of pre-inspection or pre-testing responsibilities. Exceptions to this are when the materials are transported directly by the manufacturer to the CDOT Central Laboratory or definitively specified otherwise by the Resident Engineer or Residency Head Tester. The items and test frequencies of tested materials shall be in accordance with the column titled "Central Laboratory" in the SCHEDULE.

Test results and observations shall be documented on proper CDOT forms and distributed in accordance with CDOT procedures. The Consultant tester shall make applicable QPM entries. The Project Engineer and the contractor shall be promptly notified of any failing tests. This notification shall be on CDOT Form 626 or other approved form. The Project Engineer may require additional testing or other services for adequate Quality Control or Quality Assurance. Other services may be requested in writing by the Resident Engineer.

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#### **B. Personnel Qualifications**

Personnel qualifications and staffing levels for the project shall be subject to the approval of the Resident Engineer and Region Materials Engineer. The Consultant supplied materials testing technicians (MTT) shall be permanently assigned to a project and shall have the following minimum qualifications:

- 1) Certified or have made application to and be working towards a Level 2 Certification under the National Institute for Certification in Engineering Technology (NICET) Certification Program. This certification must be in Construction Materials Testing and Inspecting for the types of work being performed, e.g.: aggregates, asphalt, concrete and soils. A degree in an engineering related field may be substituted for the NICET requirement. A copy of the NICET Certification and/or engineering degree shall be provided to the CDOT Engineer.
- 2) The materials testing technician(s) performing the tests must have a minimum of one year experience in each specialty field (soils, aggregates, asphalt paving, concrete, etc.) that is being tested.
- 3) Technicians performing concrete tests shall be certified by the American Concrete Institute (ACI).
- 4) The MTT performing hot bituminous pavement tests shall be certified, Level A/B minimum, by the Colorado Asphalt Technician Certification Program (LabCAT).
- 5) Technicians performing quality control testing of soils and aggregates shall be certified through the WAQTC Qualification Program.

The MTT shall be thoroughly familiar with CDOT forms and documentation requirements; the MTT shall have a working knowledge of QPM programs.

Personnel provided by the Consultant who do not meet all of the specified requirements, or who fail to perform their work in an acceptable manner, shall be removed from the project when determined and directed by the Resident Engineer.

#### **C. Additional Equipment**

The Consultant shall furnish all personnel, materials, equipment, and transportation required to perform the work. A field laboratory trailer will be provided by contractor pay item for the use by Consultant.

In addition to Section 1, General Requirements, the following equipment shall be furnished by the consultant for this project in sufficient quantity and in good working order to ensure accurate performance of all work required in a timely manner:



## **SCOPE OF WORK**

### **CONSTRUCTION MANAGEMENT**

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- 1) One Nuclear Moisture-Density Gauge
- 2) 2 Concrete air meters, 2 slump cones, and other concrete testing equipment
- 3) One set of sieves for aggregates and soil gradations
- 4) One electronic scale
- 5) Sample containers and small tools
- 6) Proctor equipment for soil curves and one-point tests
- 7) Atterburg limits
- 8) Sample drying equipment
- 9) Concrete cylinder molds, which meet AASHTO requirements except that paper molds, shall not be used, and plastic molds shall not be reused
- 10) Computer with printer and Microsoft office software or software compatible with CDOT communication needs.
- 11) Miscellaneous equipment for performing the required soils, asphalt and concrete tests
- 12) Additional equipment identified during initial project meetings

#### **D. Specific Testing Requirements**

The Consultant shall sample, test, and document all materials generated and produced on the project. This includes materials delivered to the project that are listed in the Summary of Approximate Quantities or referred to in the Design/Build Plans and Specifications. The number of tests required shall be in accordance with the Schedule in the Field Materials Manual. Additional quantities may be added by Contract Modification Order, or plan approximate quantities may be increased or decreased. The MTT and Project Engineer shall review project quantities on a weekly basis to ensure that sufficient tests have been performed for all material placed to date. The Consultant shall also provide any other services as requested by the CDOT.

Testing of materials that are specifically designated to be pre-inspected or pretested by this or any other Department of Transportation shall remain the responsibility of the CDOT. The MTT shall document and transport samples of any and all materials to the CDOT Region Laboratory that are required to be tested by the CDOT regardless of pre-inspection or pre-testing responsibilities.

The items and test frequencies of CDOT tested materials shall be in accordance with the column titled Central Laboratory in the Schedule in the Field Materials Manual.

#### **E. Assurance Sampling and Testing**

The Consultant shall coordinate the schedule of the Independent Assurance Tests (IAT) for the project with the Region Materials Section in accordance with the CDOT Form 379. Advance notice of 48 hours is required for proper coordination.

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#### **F. Documentation**

In addition to daily diaries, Consultant testers shall furnish the Consultant Project Engineer with original copies of all worksheets and test results on a daily basis. The MTT shall make applicable entries into QPM programs. The Consultant tester shall also keep the CDOT Form 626 up to date at all times and provide copies of this form to the Consultant Project Engineer within 12 hours. The Consultant Project Engineer shall be informed immediately of any non-specification material. The Consultant shall provide the CDOT Form 626 to the contractor within 12 hours for any non-specification material.

Test results and sample submittals transmitted to CDOT's Region or Central Laboratory shall be recorded on appropriate CDOT Forms. The Consultant may use CDOT worksheets or worksheets approved by the Resident Engineer. CDOT Forms and worksheets are available through the Resident or on CDOT's website.

The Consultant Tester shall furnish the Consultant Project Engineer with original copies of all worksheets and test results on a daily basis. The Consultant shall have available all correspondence and applicable CDOT forms for the Resident Engineer or his authorized representative's review.

#### **G. Submittal of Final Documentation**

Final documentation shall be submitted to the Project Engineer within 20 working days after completion of all work. A completed CDOT Form 250 shall be submitted to the Project Engineer 10 days after the Consultant tester has been notified of final quantities. Failure to submit final documentation as required will result in withholding of Consultant payments.

#### **H. Additional Project Standards**

If the required method is not described in the CDOT Field Materials Manual, the required work shall be completed in accordance with:

AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing (as revised and supplemented), or

The ASTM Standards, and Tentatives, in this order.

Proposed work procedures shall be coordinated with the Project Engineer and Residency Head Tester prior to the start of work. SiteManager may be required when applicable to the project.